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==============================================================
Sequence Listing was accepted with existing errors.
See attached Validation Report.
If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).
Reviewer: Anne Corrigan
Timestamp: Wed Jul 25 18:16:00 EDT 2007
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Application No: 10590810   Version No: 1.1

Input Set:

Output Set:

Started: 2007-07-25 18:15:36.750

Finished: 2007-07-25 18:15:42.305

Elapsed: 0 hr(s) 0 min(s) 5 sec(s) 555 ms

Total Warnings: 36

Total Errors: 2

No. of SeqIDs Defined: 108

Actual SeqID Count: 108

Error code	Error Description
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W 213	Artificial or Unknown found in <213> in SEQ ID (2)
W 213	Artificial or Unknown found in <213> in SEQ ID (3)
W 213	Artificial or Unknown found in <213> in SEQ ID (4)
W 213	Artificial or Unknown found in <213> in SEQ ID (5)
W 213	Artificial or Unknown found in <213> in SEQ ID (6)
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W 213	Artificial or Unknown found in <213> in SEQ ID (9)
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W 213	Artificial or Unknown found in <213> in SEQ ID (17)
W 213	Artificial or Unknown found in <213> in SEQ ID (18)
E 355	Empty lines found between the amino acid numbering and the
E 321	No. of Bases conflict, this line has no nucleotides SEQID (34)

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              Input Set:


             Output Set:



            Started:  2007-07-25 18:15:36.750
           Finished:  2007-07-25 18:15:42.305
            Elapsed:  0 hr(s) 0 min(s) 5 sec(s) 555 ms
     Total Warnings:  36
       Total Errors:  2
No. of SeqIDs Defined:  108
  Actual SeqID Count:  108
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Error code   Error Description

W   213   Artificial or Unknown found in <213> in SEQ ID (39)

W   213   Artificial or Unknown found in <213> in SEQ ID (40)
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SUBSTITUTE SEQUENCE LISTING

<110> JESTIN, JEAN-LUC
      VICHIER-GUERRE, SOPHIE
      FERRIS, STEPHANE

<120> METHODS FOR OBTAINING THERMOSTABLE ENZYMES, DNA POLYMERASE I
      VARIANTS FROM THERMUS AQUATICUS HAVING NEW CATALYTIC ACTIVITIES,
      METHODS FOR OBTAINING THE SAME, AND APPLICATIONS OF THE SAME

<130> 295295US-10590810

<140>   10/590,810
<141>   2006-08-25

<150> PCT/IB05/00734
<151> 2005-02-25

<150> 10/787,219
<151> 2004-02-27

<160> 108

<170> PatentIn version 3.3

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<213> Artificial Sequence

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<210> 3
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<212> DNA
<213> Artificial Sequence

<220>
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<210> 4
<211> 28
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<213> Artificial Sequence

<220>
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<223> This region may encompass the bases "car" or "avy"

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gcagg   65

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cc   62

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catcc   65

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<211> 62
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<220>
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<220>
<221> modified_base
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<223> This region may encompass the bases "ytg" or "rbt"

<400> 10
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tg   62

<210> 11
<211> 43
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<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

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<222> (28)..(30)
<223> n is a, c, g, or t

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<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 12
aaauacaaca auaaaacgcc acaucuugcg   30

<210> 13
<211> 28
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 13
taacacgaca aagcgcaaga tgtggcgt   28

<210> 14
<211> 30
<212> DNA
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<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 14
aaatacaaca ataaaacgcc acatcttgcg   30

<210> 15
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
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<400> 15
ttcattcttg ctagctcctg ggagaggc   28

<210> 16
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
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<400> 16
gagaagatcc tgcagtaccg ggagc   25

<210> 17
<211> 19
<212> DNA
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<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 17
gaccaacatc aagactgcc   19

<210> 18
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 18
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<211> 1688
<212> DNA
<213> Thermus aquaticus

<220>
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<222> (3)..(1688)

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   Met Ala Ser Gly Gly Gly Gly Cys Gly Gly Gly Gly Ser Pro Lys
   1   5   10   15

gcc ctg gag gag gcc ccc tgg ccc ccg ccg gaa ggg gcc ttc gtg ggc   95
Ala Leu Glu Glu Ala Pro Trp Pro Pro Pro Glu Gly Ala Phe Val Gly
                20   25   30

ttt gtg ctt tcc cgc aag gag ccc atg tgg gcc gat ctt ctg gcc ctg   143
Phe Val Leu Ser Arg Lys Glu Pro Met Trp Ala Asp Leu Leu Ala Leu
            35   40   45

gcc gcc gcc agg ggg ggc cgg gtc cac cgg gcc ccc gag cct tat aaa   191
Ala Ala Ala Arg Gly Gly Arg Val His Arg Ala Pro Glu Pro Tyr Lys
        50   55   60

gcc ctc agg gac ctg aag gag gcg cgg ggg ctt ctc gcc aaa gac ctg   239
Ala Leu Arg Asp Leu Lys Glu Ala Arg Gly Leu Leu Ala Lys Asp Leu
    65   70   75

agc gtt ctg gcc ctg agg gaa ggc ctt ggc ctc ccg ccc ggc gac gac   287
Ser Val Leu Ala Leu Arg Glu Gly Leu Gly Leu Pro Pro Gly Asp Asp
80   85   90   95

ccc atg ctc ctc gcc tac ctc ctg gac cct tcc aac acc acc ccc gag   335
Pro Met Leu Leu Ala Tyr Leu Leu Asp Pro Ser Asn Thr Thr Pro Glu
                100   105   110

ggg gtg gcc cgg cgc tac ggc ggg gag tgg acg gag gag gcg ggg gag   383
Gly Val Ala Arg Arg Tyr Gly Gly Glu Trp Thr Glu Glu Ala Gly Glu
                115   120   125

cgg gcc gcc ctt tcc gag agg ctc ttc gcc aac ctg tgg ggg agg ctt   431
Arg Ala Ala Leu Ser Glu Arg Leu Phe Ala Asn Leu Trp Gly Arg Leu
        130   135   140

gag ggg gag gag agg ctc ctt tgg ctt tac cgg gag gtg gag agg ccc   479
Glu Gly Glu Glu Arg Leu Leu Trp Leu Tyr Arg Glu Val Glu Arg Pro
    145   150   155

ctt tcc gct gtc ctg gcc cac atg gag gcc acg ggg gtg cgc ctg gac   527
Leu Ser Ala Val Leu Ala His Met Glu Ala Thr Gly Val Arg Leu Asp
160   165   170   175

gtg gcc tat ctc agg gcc ttg tcc ctg gag gtg gcc gag gag atc gcc   575
Val Ala Tyr Leu Arg Ala Leu Ser Leu Glu Val Ala Glu Glu Ile Ala
                180   185   190

cgc ctc gag gcc gag gtc ttc cgc ctg gcc ggc cac ccc ttc aac ctc   623
Arg Leu Glu Ala Glu Val Phe Arg Leu Ala Gly His Pro Phe Asn Leu
                195   200   205

aac tcc cgg gac cag ctg gaa agg gtc ctc ttt gac gag cta ggg ctt   671
Asn Ser Arg Asp Gln Leu Glu Arg Val Leu Phe Asp Glu Leu Gly Leu
            210   215   220

ccc gcc atc ggc aag acg gag aag acc ggc aag cgc tcc acc agc gcc   719
Pro Ala Ile Gly Lys Thr Glu Lys Thr Gly Lys Arg Ser Thr Ser Ala
    225   230   235

gcc gtc ctg gag gcc ctt cgc gag gcc cac ccc atc gtg gag aag atc   767
Ala Val Leu Glu Ala Leu Arg Glu Ala His Pro Ile Val Glu Lys Ile
240   245   250   255

ctg cag tac cgg gag ctc acc aag ctg aag agc acc tac att ggc ccc   815
Leu Gln Tyr Arg Glu Leu Thr Lys Leu Lys Ser Thr Tyr Ile Gly Pro
                260   265   270

ttg ccg gac ctc atc cac ccc agg acg ggc cgc ctc cac acc cgc ttc   863
Leu Pro Asp Leu Ile His Pro Arg Thr Gly Arg Leu His Thr Arg Phe
            275   280   285

aac cag acg gcc acg gcc acg ggc agg cta agt agc tcc gat ccc aac   911
Asn Gln Thr Ala Thr Ala Thr Gly Arg Leu Ser Ser Ser Asp Pro Asn
    290   295   300

ctc cag aac gtc ccc gtc cgc acc ccg ctt ggg cag agg atc cgc cgg   959
Leu Gln Asn Val Pro Val Arg Thr Pro Leu Gly Gln Arg Ile Arg Arg
    305   310   315

gcc ttc atc gcc gag gag ggg tgg cta ttg gtg gcc ctg gac tat agc   1007
Ala Phe Ile Ala Glu Glu Gly Trp Leu Leu Val Ala Leu Asp Tyr Ser
320   325   330   335

cag ata gag ctc agg gtg ctg gcc cac ctc tcc ggc gac gag aac ctg   1055
Gln Ile Glu Leu Arg Val Leu Ala His Leu Ser Gly Asp Glu Asn Leu
                340   345   350

atc cgg gtc ttc cag gag ggg cgg gat atc cac acg gag acc gcc agc   1103
Ile Arg Val Phe Gln Glu Gly Arg Asp Ile His Thr Glu Thr Ala Ser
                355   360   365

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tgg atg ttc ggc gtc ccc cgg gag gcc gtg gac ccc ctg atg cgc cgg        1151
Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met Arg Arg
        370               375               380

gcg gcc aag acc atc aac ttc ggg gtc ctc tac ggc atg tcg gcc cac        1199
Ala Ala Lys Thr Ile Asn Phe Gly Val Leu Tyr Gly Met Ser Ala His
    385               390               395

cgc ctc tcc cag gag cta gcc atc cct tac gag gag gcc cag gcc ttc        1247
Arg Leu Ser Gln Glu Leu Ala Ile Pro Tyr Glu Glu Ala Gln Ala Phe
400               405               410               415

att gag cgc tac ttt cag agc ttc ccc aag gtg cgg gcc tgg att gag        1295
Ile Glu Arg Tyr Phe Gln Ser Phe Pro Lys Val Arg Ala Trp Ile Glu
                420               425               430

aag acc ctg gag gag ggt agg agg cgg ggg tac gtg gag acc ctc ttc        1343
Lys Thr Leu Glu Glu Gly Arg Arg Arg Gly Tyr Val Glu Thr Leu Phe
            435               440               445

ggc cgc cgc cgc tac gtg cca gac cta gag gcc cgg gtg aag agc gtg        1391
Gly Arg Arg Arg Tyr Val Pro Asp Leu Glu Ala Arg Val Lys Ser Val
        450               455               460

cgg gag gcg gcc gag cgc atg gcc ttc aac atg ccc gtc cag ggc acc        1439
Arg Glu Ala Ala Glu Arg Met Ala Phe Asn Met Pro Val Gln Gly Thr
        465               470               475

gcc gcc gac ctc acg aag ctg gct atg gtg aag ctc ttc ccc agg ctg        1487
Ala Ala Asp Leu Thr Lys Leu Ala Met Val Lys Leu Phe Pro Arg Leu
480               485               490               495

gag gaa atg ggg gcc agg atg ctc ctt cag gtc cac gac gag ctg gtc        1535
Glu Glu Met Gly Ala Arg Met Leu Leu Gln Val His Asp Glu Leu Val
                500               505               510

ctc gag gcc cca aaa gag ggg gcg gag gcc gtg gcc cgg ctg gcc aag        1583
Leu Glu Ala Pro Lys Glu Gly Ala Glu Ala Val Ala Arg Leu Ala Lys
                515               520               525

gag gtc atg gag ggg gtg tat ccc ctg gcc gtg ccc ctg gag gtg gag        1631
Glu Val Met Glu Gly Val Tyr Pro Leu Ala Val Pro Leu Glu Val Glu
        530               535               540

gtg ggg ata ggg gag gac tgg ctc tcc gcc aag gag gcg gcc gca ctg        1679
Val Gly Ile Gly Glu Asp Trp Leu Ser Ala Lys Glu Ala Ala Ala Leu
        545               550               555

gtg ccg cgc                                                            1688
Val Pro Arg
560


<210> 20
<211> 562
<212> PRT
<213> Thermus aquaticus
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			20				25				30			

Val	Leu	Ser	Arg	Lys	Glu	Pro	Met	Trp	Ala	Asp	Leu	Leu	Ala	Leu	Ala
		35					40					45			

Ala	Ala	Arg	Gly	Gly	Arg	Val	His	Arg	Ala	Pro	Glu	Pro	Tyr	Lys	Ala
		50				55					60				

Leu	Arg	Asp	Leu	Lys	Glu	Ala	Arg	Gly	Leu	Leu	Ala	Lys	Asp	Leu	Ser
65				70					75					80	

Val	Leu	Ala	Leu	Arg	Glu	Gly	Leu	Gly	Leu	Pro	Pro	Gly	Asp	Asp	Pro
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Met	Leu	Leu	Ala	Tyr	Leu	Leu	Asp	Pro	Ser	Asn	Thr	Thr	Pro	Glu	Gly
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Val	Ala	Arg	Arg	Tyr	Gly	Gly	Glu	Trp	Thr	Glu	Glu	Ala	Gly	Glu	Arg
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Gly	Glu	Glu	Arg	Leu	Leu	Trp	Leu	Tyr	Arg	Glu	Val	Glu	Arg	Pro	Leu
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Ser	Ala	Val	Leu	Ala	His	Met	Glu	Ala	Thr	Gly	Val	Arg	Leu	Asp	Val
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Ala Ile Gly Lys Thr Glu Lys Thr Gly Lys Arg Ser Thr Ser Ala Ala
225             230             235                 240


Val Leu Glu Ala Leu Arg Glu Ala His Pro Ile Val Glu Lys Ile Leu
                245                 250                 255


Gln Tyr Arg Glu Leu Thr Lys Leu Lys Ser Thr Tyr Ile Gly Pro Leu
            260             265             270


Pro Asp Leu Ile His Pro Arg Thr Gly Arg Leu His Thr Arg Phe Asn
            275             280                 285


Gln Thr Ala Thr Ala Thr Gly Arg Leu Ser Ser Ser Asp Pro Asn Leu
    290                 295             300


Gln Asn Val Pro Val Arg Thr Pro Le
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